

REMEDIAL INVESTIGATION REPORT

**Former Celotex Property
Edgewater, New Jersey**

November 1998

Prepared by:

**ENVIRO-SCIENCES, INC.
111 HOWARD BOULEVARD, SUITE 108
MT. ARLINGTON, NEW JERSEY 07856
(973)398-8183 • (973)398-8037 - Fax**



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REMEDIAL INVESTIGATION REPORT

Former Celotex Property Edgewater, New Jersey

1.0 INTRODUCTION

On October 15, 1997, the United States Environmental Protection Agency (USEPA) issued a discharge notice to Edgewater Associates (EA) for an apparent discharge of a dark brown Light Non Aqueous Phase Liquid (LNAPL) into the Hudson River. LNAPL was observed seeping into the Hudson River (by the United States Coast Guard) through the river wall shared by the former Celotex property and the adjacent Ferola/Quanta Superfund site to the south. The USEPA also installed a containment boom in the Hudson River around the discharge area. In response to the USEPA discharge notice, EA initiated an investigation to determine the nature of the discharge and identify the source of the discharge to the Hudson River. The initial investigation focused on sediment and surface water quality from the Hudson River. The second investigation was conducted on the southeast portion of the Celotex site and focused on subsurface conditions and transport mechanisms. The third investigation was conducted on the Celotex site to determine the areal extent of subsurface LNAPL contamination along the southern property boundary of the Celotex site.

Based on the results of the above investigations and the fact that a tar manufacturing operation took place on the Ferola/Quanta Superfund site, and had operated for decades, it is apparent that contamination from the Ferola Superfund site has impacted the Hudson River and the Celotex site. A Remedial Investigation Report (RIR) was submitted in June 1997, and documented the historical use of the Celotex property. Included in that RIR were Sanborn insurance maps, property titles, areal photos, topography maps and local historical documents that identify past property owners and the associated operations of what is now the Ferola/Quanta Superfund site.

2.0 HUDSON RIVER SAMPLING EVENT

On December 10, 1997, Enviro-Sciences, Inc. (Enviro-Sciences) obtained sediment and surface water samples from the Hudson River near the location of the suspected discharge (see Figure 1 for sample locations). The samples were analyzed for volatile organic (VO) compounds, base neutral (BN) compounds, metals (using Target Analyte List and Target Compound List compounds), polychlorinated biphenyls (PCB), pesticides, cyanide and total petroleum hydrocarbons (TPH). The USEPA obtained split samples of the sediment and surface water. The discharge was reported to be located east of the concrete dock on the southeast corner of the Celotex property by USEPA officials. During the sampling event, it was observed that a pipe was located under the dock. It appeared to originate from the Ferola/Quanta Superfund site and ended on the Celotex property. The pipe is approximately 18 inches in diameter and may be the source of the discharge to the Hudson River. No contamination was observed discharging from the pipe during this sampling event.

The analytical results indicated the presence of VO, BN, cyanide and TPH (see Table 1 for analytical results summary and Appendix A for laboratory reports). The primary compounds identified in BN analysis were Polynuclear Aromatic Hydrocarbons (PAH), which are the main constituents in coal tar. Observations made by contractors hired by the USEPA during the discharge event indicated that the material discharged to the Hudson River was a brown to black liquid with a density less than water and exhibited a translucent sheen. The USEPA contractor also indicated that the discharge events are intermittent. It is unknown what controls the frequency and duration of the discharge.

3.0 MARCH 25, 1998 SAMPLING EVENT

3.1 Introduction

A second sampling event was conducted on March 25, 1998 to determine the source of the discharge. Four test pits were used to investigate the subsurface soil conditions on the Celotex property. The test pits were located west of the cement dock (see Figure 1 for sample locations). Samples were obtained from the test pits and analyzed for PP+40. A track hoe was utilized to excavate the test pits and obtain the samples. Each test pit was examined for evidence of staining, odors and LNAPL. Soil samples were biased toward zones with the highest Photo Ionization Detector (PID) readings, or heavy staining.

3.2 Investigation Results

Test pit TR1 was located 62 feet west of the concrete dock and five feet north of the southern property boundary and was approximately four feet deep. LNAPL was observed in test pit TR1. The LNAPL exhibited two viscosities, one was mobile with a low viscosity and the other was significantly less mobile with a higher viscosity. The LNAPL was dark brown to black. The high viscosity tar-like LNAPL was present in a layer approximately two feet thick. The less abundant low viscosity LNAPL accumulated in small patches that floated on water in the test pit. Water was present in the excavation because an old water pipe was broken and water accumulated in the excavation. PID reading of the LNAPL yielded 30 to 40 ppm concentrations. A four-foot section of broken pipe was present in the test pit and the pipe was filled with LNAPL. Sample TR1-1 was obtained from the stained horizon approximately two feet below grade and sample TR1-PIPE was obtained from LNAPL inside the pipe. Groundwater was not encountered. The analytical results indicated the presence of VO, PAH compounds and cadmium above NJDEP soil cleanup criteria (see Table 1 for analytical results summary and Appendix A for laboratory reports). Based on the presence of elevated concentration of PAH compounds and VO compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR1 is interpreted as lying within the LNAPL plume.

Test pit TR2 was located 10 feet east of TR1. LNAPL with the same thickness and characteristics as TR1 was observed in TR2. Sample TR2-1 was obtained from the

stained horizon approximately two feet below grade. Groundwater was not encountered. A concrete pipe chase with a man-way on top was located immediately west of the excavation. The analytical results indicated the presence of VO and PAH compounds above NJDEP soil cleanup criteria. Based on the presence of elevated concentration of PAH compounds and VO compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR2 is interpreted as lying within the LNAPL plume.

Test pit TR3 was located approximately 90 feet north of TR2, which is elevated approximately eight feet above the local grade of TR1 and TR2. Typical construction material (fill) was encountered from the ground surface to eleven feet below grade. Soil staining and LNAPL were present from approximately 7 to 11 feet below grade. Sample TR3-1 was obtained from the stained horizon. A wall-like wooden structure was present on the west side of the excavation and paralleled the Hudson River. The wooden structure may have been associated with a previous bulkhead. The analytical results indicated the presence of metals, VO and PAH compounds above NJDEP soil cleanup criteria. Based on the presence of elevated concentration of PAH compounds and VO compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR3 is interpreted as lying within the LNAPL plume.

TR4 was located approximately 100 feet north of TR3. Construction fill was encountered from the ground surface to approximately eleven feet below grade. No soil staining, LNAPL, or odors were observed and no samples were obtained. Based on the absence of LNAPL in the subsurface; the area immediately surrounding TR5 is interpreted as lying outside the LNAPL plume.

3.3 Conclusions

The analytical results indicated that the soil samples obtained during the March 25, 1998 sampling have similar chemical characteristics as the sediment and surface water samples collected in the previous sampling event. The primary compounds identified in BN analysis are PAHs. Typical PAH compounds include naphthalene, fluorene, pyrene, and benzo (a) anthracene and benzo (a) pyrene. The primary VO compounds identified in samples are benzene, toluene, ethylbenzene and xylene (BTEX). The LNAPL discharged to the Hudson River and that present in test pits was a brown fluid with an odor similar to coal tar. The LNAPL discharged to the Hudson River is most likely associated with the LNAPL present in the subsurface.

4.0 JUNE 1998 SUBSURFACE INVESTIGATION

On June 3, 4, and 5, 1998, Enviro-Sciences conducted a subsurface investigation adjacent to the southern property boundary on the Celotex site. The purpose of the investigation was to determine the areal extent of an LNAPL plume suspected to exist on this portion of the property.

4.1 Lithology

The typical lithology of the southern portion of the site consists of approximately eight feet of fill material comprised of construction debris (i.e. bricks, wood, concrete, and undifferentiated sediments), underlain by concrete floor slab of the former building that existed on this portion of the site, underlain by an earlier layer of fill material.

The historic fill was deposited to extend the shoreline of the Hudson River approximately 500 feet eastward from its former location. The water table is present at a depth of approximately ten feet below present grade, corresponding to one to two feet beneath the intact concrete former building slabs. The LNAPL, where present, is located one to two feet below the concrete building slabs.

4.2 Sampling Methodology

A track hoe was utilized to excavate test pits extending from the surface to just below the water table (which exists at a depth of approximately ten feet below grade). Test pits were first made in areas strongly suspected of containing the LNAPL to confirm its presence and to determine whether its character varied from location to location. With this information, additional excavations were made in the areas surrounding the locations known to contain the LNAPL in an effort to determine the horizontal extent of the plume.

Each test pit was examined for evidence of staining, odors, and LNAPL, as well as likely transport mechanisms or indicator horizons, such as the water table or building structures, in order to aid in the positioning of future excavation locations. Soil samples were biased toward zones with the highest Photo Ionization Detector (PID) readings, or heavy staining, for laboratory analysis to confirm the field observations. All samples were obtained to characterize or delineate the plume and were analyzed by a New Jersey certified laboratory for PP+ 40.

4.3 Investigation Results

Test pit TR5 was located immediately to the west of samples obtained during the March 25, 1998, sampling event. The presence of a zone of heavy soil staining, three to four inches thick, at a depth of 8.5 feet below local grade was observed. This depth corresponds to the soil horizon immediately below an intact concrete building pad. The test pit was advanced to total depth of approximately 11 feet below local grade, at which time groundwater entered and began to accumulate in the bottom of the excavation. The groundwater entered the excavation through seeps located just below the concrete pad. A

small amount of LNAPL also entered the excavation, and formed a discontinuous green-brown layer on the water.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad, representing the most heavily stained soil horizon and the source of the LNAPL on the water. The laboratory analytical results (see Table 1) indicate the presence of PAH and VO compounds in concentrations that exceed soil cleanup criteria. Based on the presence of elevated concentration of PAH compounds (particularly naphthalene) and VO compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR5 is interpreted as lying within the LNAPL plume.

Test pit TR6 was located north of TR5. The presence of a zone of heavy soil staining immediately beneath the concrete pad was observed at a depth of ten feet below grade. The test pit was advanced to a total depth of 14 feet below grade, at which point groundwater began to infiltrate the excavation. The soil beneath the concrete pad had a strong weathered gasoline odor. No LNAPL was present, although sheen was present on the water entering the excavation.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad that represented the most heavily stained soil. The laboratory analytical results indicate the presence of PAH and VO compounds particularly BTEX exhibiting concentrations in the low ppm range. However, naphthalene was not detected. Based on the lack of naphthalene in the sample, and elevated concentrations BTEX, as well as the absence of LNAPL, this test pit is interpreted as being located outside of the LNAPL plume. However, this area is suspected of being contaminated due to discharges associated with a gasoline storage tank formerly located adjacent to TR6. An investigation of the gasoline-related contamination will be performed.

Test pit TR7 was located approximately 100 feet west of TR5. The presence of a zone of soil staining, ten feet below grade immediately below a layer of brick rubble was observed. The test pit was advanced to total depth of approximately 16 feet below local grade. No LNAPL entered the excavation, and the stained soil did not exhibit a coal tar odor. The groundwater that did enter the excavation did, however, have small patches of sheen.

A soil sample was obtained from the heavily stained soil horizon immediately below the brick rubble, representing the most heavily stained soil horizon. The laboratory analytical results indicate the presence of PAH and VO compounds above NJDEP soil cleanup criteria. Based on the soil staining, the presence of a sheen and the analytical results; the area immediately surrounding TR7 is interpreted as lying inside the limits of a residual LNAPL plume.

Test pit TR8 was located along the southwest corner of the property. The presence of a zone of heavy soil staining and free product immediately below the concrete slab was observed at a depth of ten feet below grade. The test pit was advanced to a total depth of

approximately 12 feet below local grade, with groundwater entering at 10.5 feet below grade.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad, representing the most heavily stained soil horizon and the source of the LNAPL on the water. The laboratory analytical results indicate the presence of PAH and VO compounds, particularly anthracene, fluoranthene, naphthalene, and xylene above NJDEP soil cleanup criteria. Based on the presence of elevated concentrations of PAH and VO compounds in the soil samples and the presence of LNAPL in the subsurface, the area immediately surrounding TR8 is interpreted as lying within the LNAPL plume.

Test pit TR9 was located north of TR5 and west of TR6. A dark gray zone of heavy soil staining immediately beneath the concrete pad, which was encountered at a depth of eight feet below grade, was observed. The test pit was advanced to a total depth of approximately 12 feet below grade, at which point groundwater began to infiltrate the excavation. The soil beneath the concrete pad had a strong weathered gasoline odor. No LNAPL was present, although sheen was present, on the water entering the excavation.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad, representing the most heavily stained soil horizon. The laboratory analytical results indicate the presence of PAH and VO compounds that exceeded NJDEP soil cleanup criteria. Based on the absence of naphthalene and relatively low concentrations of PAH compounds, this test pit is interpreted as being located outside of the coal tar LNAPL plume but within the zone of soil contamination noted in test pit TR6.

Test pit TR10 was located north of TR7. No signs of any soil contamination, including the soil horizon immediately beneath the concrete pad, at a depth of eight feet below grade were observed. The test pit was advanced to a total depth of approximately 12 feet below grade, at which point groundwater began to infiltrate the excavation. No LNAPL or sheen was present on the water entering the excavation.

A soil sample was obtained from the soil horizon immediately below the concrete pad. The laboratory analytical results indicate that VO and PAH compounds are below NJDEP soil cleanup criteria. Based on the lack of soil staining, the absence of VO compounds, and the very low concentration of PAH compounds, this test pit is interpreted as being located outside of the LNAPL plume.

Test pit TR11, the western most test pit, was located in a low portion of the property and was excavated to a depth of approximately five feet. The soil encountered did not contain any LNAPL or coal tar odor, although a reddish soil horizon was encountered. This soil was sampled and analyzed only for Priority Pollutant Metals (PPM). Analytical results indicate the presence of elevated concentrations of antimony, arsenic, cadmium, copper, lead, thallium and zinc that exceed the NJDEP soil cleanup criteria. Based on the lack of LNAPL and soil staining this test pit is interpreted as being located outside the LNAPL plume.

Test pit TR12 was aborted due to the presence of a thick concrete pad.

Test pit TR13 was aborted due to the presence of red and yellow colored soil immediately beneath a layer of asphalt pavement. This material was similar in nature to the material present in test pit TR11. The analytical results from TR11 are most likely indicative of the soil quality in the area of TR13. The analytical results indicate high concentrations of metals.

Test pit TR14 was located along the southern portion of the property. The presence of a zone of heavy soil staining and LNAPL, immediately below the concrete slab that was present at a depth of eight feet below grade, was observed. The test pit was advanced to total depth of approximately 12 feet below local grade, with groundwater entering at nine feet below grade.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad, representing the most heavily stained soil horizon and the source of the LNAPL on the water. The laboratory analytical results indicate the presence of elevated concentrations of PAH compounds above NJDEP soil cleanup criteria. Based on the presence of elevated concentrations of PAH compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR14 is interpreted as lying within the LNAPL plume.

Test pit TR15 was located between TR7 and TR8. The presence of a zone of heavy soil staining and LNAPL, immediately below the concrete slab, at a depth of ten feet below grade was observed. The test pit was advanced to total depth of approximately 12 feet below local grade, with groundwater entering at nine feet below grade. The excavation had a very strong odor similar to gasoline and a strong coal tar odor.

A soil sample was obtained from the heavily stained soil horizon immediately below the concrete pad, representing the most heavily stained soil horizon and the source of the LNAPL on the water. The laboratory analytical results indicate the presence of elevated concentrations of VO and PAH compounds above NJDEP soil cleanup criteria. Based on the presence of elevated concentrations of VO and PAH compounds in the soil samples and the presence of LNAPL in the subsurface; the area immediately surrounding TR14 is interpreted as lying within the LNAPL plume.

Test pit TR16 was located north of TR15 and was free of any signs of contamination, including the soil horizon immediately beneath the concrete pad, which was encountered at a depth of nine feet below grade. The test pit was advanced to a total depth of approximately 12 feet below grade, at which point groundwater began to infiltrate the excavation. No LNAPL was present on the water entering the excavation.

A soil sample was obtained from the soil horizon immediately below the concrete pad. The laboratory analytical results indicate the presence of VO and PAH compounds below

NJDEP soil cleanup criteria. Based on the lack of soil staining and low concentrations of VO and PAH compounds, this test pit is located outside of the LNAPL plume.

Test pit TR17 was located between test pits TR5 and TR9. The presence of a zone of heavy soil staining immediately below the concrete slab at a depth of nine feet below grade was observed. The test pit was advanced to a total depth of approximately 11 feet below local grade. The laboratory analytical results indicate the presence of elevated concentrations of VO and PAH compounds.

Based on the presence of elevated concentrations of VO and PAH compounds, the area immediately surrounding TR17 is interpreted as lying within the residual LNAPL plume.

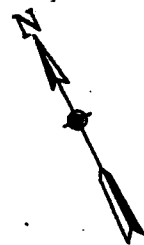
4.4 Conclusions

Based on field observations and laboratory analyses, the extent of the known coal tar related LNAPL plume is as shown on Figure 1. The LNAPL plume extends over approximately three acres of the southern portion of the site.

FIGURES

Figure 1

Known Extent of Coal Tar Contamination



APPROX. NEW LOCATION OF RIVER ROAD

FORMER
MILL BUILDING

SHORE LINE

PROPERTY BOUNDARY

LEGEND



EXTENT OF LNAPL ON CELOTEX (DASHED WERE INFERED)



TEST PITS



OUTLINE OF DEMOLISHED BUILDINGS



NON-MOBILE RESIDUAL CONTAMINATION

GRAPHIC SCALE

0 50' 100'

1"=100'

FIGURE 1

KNOWN EXTENT OF COAL-TAR
CONTAMINATION

EDGEWATER ASSOCIATES PROPERTY
Former Celotex Site

PROJECT MANAGER JIG PROJECT NO. DEMETER-PHASE2-G55107



ENVIRO-SCIENCES, INC.
111 Howard Boulevard, Suite 108
Mount Arlington, NJ 07856
973-398-8183 • Fax 973-398-8037

DRAWN BY/DATE
ECS 10/15/98

APPROVED/DATE
JIG /

DRAWING NUMBER
CTP-009P

TABLES

Table 1
Analytical Result Summary

TABLE 1

EDGEWATER ASSOCIATES

Former Celotex Site

Analytical Sample Results

Lab ID	5278-001	5278-002
Sample ID	A01-W	A02-S

Sample Date	12/11/97	12/10/97
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TAL Metals (mg/kg)

Aluminum	1.7	15700
Antimony	ND	ND
Arsenic	0.032	17
Barium	0.047	58.3
Beryllium	ND	0.724
Cadmium	ND	1.25
Calcium	163	3740
Chromium	ND	75.7
Cobalt	ND	9.26
Copper	ND	94.6
Iron	6.37	33600
Lead	0.101	94.9
Magnesium	375	7000
Manganese	0.946	460
Mercury	ND	1.22
Nickel	ND	30.1
Potassium	118	3320
Selenium	ND	4.79
Silver	0.0005	3.4
Sodium	3230	8110
Thallium	ND	ND
Vanadium	ND	33.2
Zinc	0.16	187

Notes:

ND = Not detected

B= Compound found in method blank

J= Estimated Value

D= Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
 Former Celotex Site
 Analytical Sample Results

Lab ID	5278-001	5278-002
Sample ID	A01-W	A02-S
Sample Date	12/11/97	12/10/97

TCL Volatiles (ug/kg)

Benzene	257	ND
Toluene	59	ND
Ethylbenzene	111	3,830
Total Xylenes	233	8,370
Total TCL Target VO	660	12,200
Total TCL TIC VO	2,080	362,600

TCL AE/BN (ug/kg)

Naphthalene	1,450	134,000
2-Methylnaphthalene	163	63,600
Acenphthalene	56.80	35,000
Acenaphthylene	ND	3,420
Dibenzofuran	37.50	30,700
Fluorene	31.50	38,500
Phenanthrene	37.90	118,000
Anthracene	ND	25,800

Notes:

ND = Not detected

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TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID	5278-001	5278-002
Sample ID	A01-W	A02-S
Sample Date	12/11/97	12/10/97

TCL AE/BN's (ug/kg)

Carbazole	35	4,320
Fluoranthene	ND	88,700
Pyrene	ND	79,400
Benzo[a]anthracene	ND	28,400
Chrysene	ND	22,000
Benzo[b]fluoranthene	ND	21,000
Benzo[k]fluoranthene	ND	8,110
Benzo[a]pyrene	ND	19,500
Indeno[1,2,3-cd]pyrene	ND	10,600
Dibenz[a,h]anthracene	ND	3,670
Benzo[g,h,i]perylene	ND	12,500
Total TCL Target AE/BN	1,811.70	747,220
Total TCL TIC AE/BN	ND	254,570

PCB's (mg/kg)	ND	ND
TCL Pesticides (ug/kg)	ND	ND
TPH (mg/kg)	1.78	1,870
Cyanide, Total (mg/kg)	ND	3.18

Notes:

ND = Not detected

B= Compound found in method blank

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TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID				1483-001	1483-002	1483-003	1483-004
Sample ID				TR1-1	TR1-PIPE	TR2-1	TR3-1
Depth (feet)	Residential	Non- Residential	Impact to	2.5 - 3.0	3.0 - 3.5	2.5 - 3.0	8.5 - 9.0
Sample Date	Direct Contact	Direct Contact	Groundwater	3/25/98	3/25/98	3/25/98	3/25/98
	Soil Cleanup	Soil Cleanup	Soil Cleanup				
	Criteria	Criteria	Criteria				
PP Metals (mg/kg)							
Antimony	14	340	NLE	ND	ND	ND	ND
Arsenic	20	20	NLE	11.7	13.5	7.23	652
Beryllium	1	1	NLE	0.343	ND	0.298	0.441
Cadmium	1	100	NLE	2.07	2.07	ND	1.72
Chromium	NLE	500	NLE	7.14	7.14	14.8	38.6
Copper	600	600	NLE	65.8	114	23.2	480
Lead	400	600	NLE	130	122	56.3	523
Mercury	14	270	NLE	0.64	0.199	8.33	34
Nickel	250	2,400	NLE	6.56	13.2	17.1	26.7
Selenium	63	3,100	NLE	ND	ND	6.89	ND
Silver	110	4,100	NLE	ND	ND	ND	ND
Thallium	2	2	NLE	0.692	2	0.166	10.3
Zinc	1,500	1,500	NLE	55.7	213	63.6	282
Volatiles (ug/kg)							
Benzene	3,000	13,000	1,000	136,000	252,000	23,900 J	80,300 J
Toluene	1,000,000	1,000,000	500,000	371,000	229,000	ND	142,000 J
Ethylbenzene	1,000,000	1,000,000	100,000	157,000	45,600 J	150,000	286,000
Total Xylenes	410,000	1,000,000	100,000	262,000	320,000	386,000	1,040,000
Total VO				926,000	846,600 J	559,900 J	1,548,300 J
Total VO TIC's				9,359,300	20,385,000	11,778,000	30,809,000

Notes:
ND = Not detected
B= Compound found in method blank
J= Estimated value
D= Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Sampling Results

Lab ID				1483-001	1483-002	1483-003	1483-004
Sample ID				TR1-1	TR1-PIPE	TR2-1	TR3-1
Depth (feet)	Residential	Non- Residential	Impact to	2.5 - 3.0	3.0 - 3.5	2.5 - 3.0	8.5 - 9.0
Sample Date	Direct Contact	Direct Contact	Groundwater	3/25/98	3/25/98	3/25/98	3/25/98
	Soil Cleanup	Soil Cleanup	Soil Cleanup				
	Criteria	Criteria	Criteria				
<u>AE/BN's (ug/kg)</u>							
Phenol	10,000,000	10,000,000	50,000	ND	110,000	ND	ND
Benzyl alcohol	10,000,000	10,000,000	50,000	ND	96,600	ND	ND
2-Methylphenol	2,800,000	10,000,000	NLE	17,600	59,900	ND	ND
4-Methylphenol	2,800,000	10,000,000	NLE	22,800	146,000	ND	ND
2,4-Dimethylphenol	1,100,000	10,000,000	10,000	28,000	55,600	ND	ND
Naphthalene	230,000	4,200,000	100,000	4,810,000	19,200,000 D	2,150,000 D	19,800,000 D
2-Methylnaphthalene	NLE	NLE	NLE	1,630,000	4,700,000 D	710,000 D	523,000
Acenaphthylene	NLE	NLE	NLE	113,000	1,310,000	19,000 D	42,400
Acenaphthene	3,400,000	10,000,000	100,000	885,000	2,520,000 D	522,000 D	616,000 D
Dibenzofuran	NLE	NLE	NLE	653,000	3,690,000 D	343,000 D	390,000
Fluorene	2,300,000	10,000,000	100,000	862,000	4,130,000 D	387,000 D	606,000
Phenanthrene	NLE	NLE	NLE	3,600,000	18,300,000 D	1,760,000 D	1,880,000 D
Anthracene	10,000,000	10,000,000	100,000	987,000	8,740,000 D	468,000 D	669,000
Carbazole	NLE	NLE	NLE	524,000	5,420,000 D	156,000	41,300
Fluoranthene	2,300,000	10,000,000	100,000	1,750,000	8,620,000 D	603,000 D	692,000 D
Pyrene	1,700,000	10,000,000	100,000	2,060,000	10,800,000 D	603,000 D	740,000 D
Benzo[a]anthracene	900	4,000	50,000	851,000	3,490,000 D	195,000	241,000
Chrysene	9,000	40,000	500,000	767,000	3,410,000 D	170,000	237,000
Benzo[b]fluoranthene	900	4,000	50,000	763,000	3,600,000 D	160,000	229,000
Benzo[k]fluoranthene	900	4,000	500,000	276,000	1,020,000	58,800	82,800
Benzo[a]pyrene	660	660	100,000	675,000	3,230,000 D	138,000	205,000
Indenof1,2,3-cd]pyrene	900	400	500,000	278,000	1,290,000	56,700	103,000

Notes:

ND = Not detected

B= Compound found in method blank

J= Estimated value

D= Secondary dilution factor

CS = Compound specific

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Sampling Results

Lab ID				1483-001	1483-002	1483-003	1483-004
Sample ID				TR1-1	TR1-PIPE	TR2-1	TR3-1
Depth (feet)	Residential	Non- Residential	Impact to	2.5 - 3.0	3.0 - 3.5	2.5 - 3.0	8.5 - 9.0
Sample Date	Direct Contact	Direct Contact	Groundwater	3/25/98	3/25/98	3/25/98	3/25/98
	Soil Cleanup	Soil Cleanup	Soil Cleanup				
	Criteria	Criteria	Criteria				
Dibenz[a,h]anthracene	660	660	100,000	83,000	344,000	14,800	26,600
Benzo[g,h,i]perylene	NLE	NLE	NLE	211,000	1,140,000	51,000	90,600
Total AE/BN				21,846,400	105,422,100	8,565,300	27,214,700
Total AE/BN TIC				2,765,200	5,196,500	1,497,400	4,694,300
PCB's (ug/kg)	490	2,000	50,000	ND	ND	ND	ND
Pesticides (ug/kg)	CS	CS	CS	ND	ND	ND	ND
Cyanide, Total (mg/kg)	1,100	21,000	NLE	4.56	ND	7.84	8.65
Phenol (mg/kg)	10,000	10,000	50	11.1	72.7	0.761	1.17

Notes:

ND = Not detected

B= Compound found in method blank

J= Estimated value

D= Secondary dilution factor

CS = Compound specific

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID				46849	46850	46851	46852	46853
Sample ID #				TR-5	TR-6	TR-7	TR-8	TR-9
Depth (feet)	Residential	Non- Residential	Impact to	8.5 - 9.0	10.5 - 11.0	11.5 12.0	10.5 - 11.0	8.5 - 9.0
Sample Date	Direct Contact	Direct Contact	Groundwater	6/3/98	6/3/98	6/3/98	6/3/98	6/4/98
	Soil Cleanup	Soil Cleanup	Soil Cleanup					
	Criteria	Criteria	Criteria					
PP Metals (mg/kg)								
Antimony	14	340	NLE	ND	11.2	ND	16.7	1.1 B
Arsenic	20	20	NLE	14	941	14.7	433	442
Beryllium	1	1	NLE	0.32 B	0.94	0.39 B	0.23 B	ND
Cadmium	1	100	NLE	ND	ND	ND	4.3	ND
Chromium	NLE	500	NLE	10.4	11.3	14.6	55.7	15.3
Copper	600	600	NLE	17.2	151	13	1,320	130
Lead	400	600	NLE	38.9	3,430	8.4	2,830	676
Mercury	14	270	NLE	ND	3.3	ND	2.6	2.6
Nickel	250	2400	NLE	10.8	6.9	15.1	30.2	4.5 B
Selenium	63	3100	NLE	1.8	5.7	ND	2.9	3.5
Silver	110	4100	NLE	ND	0.56 B	ND	6.7	0.37 B
Thallium	2	2	NLE	ND	2.1	ND	8.3	3.3
Zinc	1500	1500	NLE	46.6	81.1	273	703	62.5

Volatiles Organic Compounds (ug/kg)

Aroclen	NLE	NLE	NLE	ND	173,530 D	ND	ND	6,400
Acetone	1,000,000	1,000,000	100,000	800 JB	1,900 B	1,000 B	6,500 B	ND
Carbon Disulfide	NLE	NLE	NLE	ND	ND	ND	ND	ND
Vinyl Acetate	NLE	NLE	NLE	ND	31,800	ND	ND	ND
Methylene Chloride	49,000	210,000	1,000	ND	ND	ND	7,900	ND
cis- 1,2-Dichloroethene	79,000	1,000,000	1,000	ND	ND	ND	3,300	ND
2-Butanone (MEK)	1,000,000	1,000,000	50,000	ND	ND	ND	18,900	730
Chloroform	19,000	28,000	1,000	ND	ND	ND	7,400	ND
1,1,1-Trichloroethane	210,000	1,000,000	50,000	ND	ND	ND	43,300 D	ND
Carbon Tetrachloride	2,000	4,000	1,000	ND	ND	ND	4,500	ND
1,2-Dichloroethane (EDC)	6,000	24,000	1,000	ND	ND	ND	830	ND
Benzene	3,000	13,000	1,000	8,300	18,000	ND	67,100 D	ND
Trichloroethene	23,000	54,000	1,000	2,400	ND	ND	12,900	ND
4-Methyl-2-pentanone (MIBK)	1,000,000	1,000,000	50,000	ND	ND	13,200	29,600	9,600
Toluene	1,000,000	1,000,000	500,000	14,400	16,600	480 J	674,000 D	1,600
1,1,2-Trichloroethane	22,000	420,000	1,000	ND	17,600	ND	ND	ND

Notes:

ND = Not detected

B = Compound found in method blank (organics)

B = Concentration is less than the CRDL, but greater than or equal to the IDL (Inorganic)

J = Estimated Value

D = Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID Sample ID: #				46849 TR-5	46850 TR-6	46851 TR-7	46852 TR-8	46853 TR-9
Depth (feet) Sample Date	Residential Direct Contact Soil Cleanup Criteria	Non- Residential Direct Contact Soil Cleanup Criteria	Impact to Groundwater Soil Cleanup Criteria	8.5 - 9.0 6/3/98	10.5 - 11.0 6/3/98	11.5 12.0 6/3/98	10.5 - 11.0 6/3/98	8.5 - 9.0 6/4/98
Volatiles Organic Compounds (ug/kg)								
Tetrachloroethene	4,000	6,000	1,000	860 J	ND	ND	39,100 D	ND
Chlorobenzene	37,000	680,000	1,000	ND	ND	ND	27,700	ND
Ethylbenzene	1,000,000	1,000,000	100,000	7,200	56,300 D	10,100	175,600 D	2,500
Total Xylenes	410,000	1,000,000	10,000	36,300	52,300 D	8,100	882,500 D	3,340
Styrene	23,000	97,000	100,000	ND	ND	ND	ND	ND
Isopropylbenzene	NLE	NLE	NLE	22,600	32,500	15,200	114,600 D	2,300
n-Propylbenzene	NLE	NLE	NLE	100 J	27,400	5,800	24,600	1,800
Bromobenzene	NLE	NLE	NLE	ND	ND	ND	2,300	ND
1,3,5-Trimethylbenzene	NLE	NLE	NLE	4,600	2,300	2,900	50,600 D	550 J
1,2,4-Trimethylbenzene	NLE	NLE	NLE	2,700	7,700	3,900	11,600	730
4-Isopropyltoluene	NLE	NLE	NLE	1,700	3,900	ND	5,200	ND
1,4-Dichlorobenzene	570,000	10,000,000	100,000	ND	ND	ND	2,500	ND
Total Target VO				76,060	182,400	46,000	1,336,300	11,220
Total TIC VO				885,800	333,400	397,500	249,700	1,100
Acid Extractables/Base Neutrals (ug/kg)								
Isophorone	1,100,000	10,000,000	50,000	ND	ND	ND	7,200	ND
1,2,4-Trichlorobenzene	68,000	1,200,000	100,000	ND	ND	ND	410 J	ND
Naphthalene	230,000	4,200,000	100,000	5,618,800 D	ND	43,300 D	9,300	200 J
4-Chloro-3-methylphenol	10,000,000	10,000,000	100,000	ND	1,100	ND	ND	ND
Acenaphthylene	NLE	NLE	NLE	7,600	270 J	50,500 D	3,200	94 J
Acenaphthene	3,400,000	10,000,000	100,000	166,400 JD	850	42,400 D	6,600	200 J
Diethylphthalate	10,000,000	10,000,000	50,000	ND	ND	ND	ND	45 J
Fluorene	2,300,000	10,000,000	100,000	ND	900	59,200 D	5,500	170 J
1,2-Diphenylhydrazine	NLE	NLE	NLE	ND	ND	360 J	ND	ND
Phenanthrene	NLE	NLE	NLE	438,700 JD	2,500	97,800 D	17,000	700
Anthracene	10,000,000	10,000,000	100,000	ND	740	46,500 D	9,600	240 J
Fluoranthene	2,300,000	10,000,000	100,000	204,500 JD	2,500	76,400 D	16,900	760
Pyrene	1,700,000	10,000,000	100,000	152,300 JD	2,200	65,700 D	28,000 D	830
Butylbenzylphthalate	1,100,000	10,000,000	100,000	ND	ND	ND	8,500	ND

Notes:

ND = Not detected

B = Compound found in method blank (organics)

B = Concentration is less than the CRDL, but greater than or equal to the IDL (inorganic)

J = Estimated Value

D = Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID	46849			46850	46851	46852	46853	
Sample ID #	TR-5			TR-6	TR-7	TR-8	TR-9	
Depth (feet)	Residential	Non-Residential	Impact to	8.5 - 9.0	10.5 - 11.0	11.5 12.0	10.5 - 11.0	8.5 - 9.0
Sample Date	Direct Contact Soil Cleanup Criteria	Direct Contact Soil Cleanup Criteria	Groundwater Soil Cleanup Criteria	6/3/98	6/3/98	6/3/98	6/3/98	6/4/98
Acid Extractables/Base Neutrals (ug/kg)								
Benzo[a]anthracene	900	4,000	500,000	ND	2,100	46,400 D	12,300	630
Chrysene	9,000	40,000	500,000	ND	2,000	38,600 D	11,200	680
bis(2-Ethylhexyl)phthalate	49,000	210,000	100,000	ND	ND	ND	4,600	130 J
Benzo[b]fluoranthene	900	4,000	50,000	ND	2,300	35,900 D	15,400	730
Benzo[k]fluoranthene	900	4,000	500,000	11,000	1,900	19,500 D	8,600	400 J
Benzo[a]pyrene	660	660	100,000	ND	2,400	37,000 D	10,600	530
Indeno[1,2,3-cd]pyrene	900	4,000	500,000	8,700	1,300 J	9,800	5,000	380 J
Dibenz[a,h]anthracene	660	660	100,000	1,200 J	170	1,900 J	490 J	ND
Benzo[g,h,i]perylene	NLE	NLE	NLE	7,900	1,100	10,300	4,000	350 J
Total Target AE/BN				6,617,100	24,330	681,560	184,400	7,069
Total TIC EA/BN				2,270,390	30,894	181,572	202,400	7,725
PCB (ug/kg)	490	2,000	50,000	ND	ND	ND	ND	ND
PESTICIDES (ug/kg)								
delta-BHC	NLE	NLE	NLE	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	520	2,200	50,000	ND	0.21 JP	1.70 JP	1.40 JP	ND
Heptachlor	150	650	50,000	ND	ND	ND	ND	ND
Endosulfan II	NLE	NLE	NLE	ND	ND	ND	ND	ND
Endosulfan sulfate	NLE	NLE	NLE	4.30 JP	ND	3.90 JP	7.50 P	ND
Endrin ketone	NLE	NLE	NLE	ND	ND	19.00 P	ND	ND
Cyanide (mg/kg)	1,100	21,000	NLE	ND	ND	ND	ND	ND
Phenol (ug/kg)	10,000,000	10,000,000	50,000	6,225	ND	1,697	5,383	ND

Notes:

ND = Not detected

B = Compound found in method blank (organics)

B = Concentration is less than the CRDL, but greater than or equal to the IDL (inorganic)

J = Estimated Value

D = Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID				46854	46857	46855	46856	46916	46917
Sample ID #				TR-10	TR-11	TR-14	TR-15	TR-16	TR-17
Depth (feet)	Residential	Non- Residential	Impact to	8.5 - 9.0	5.0 - 5.5	8.5 - 9.0	10.5 - 11.0	10.5 - 11.0	10. - 10.5
Sample Date	Direct Contact	Direct Contact	Groundwater	6/4/98	6/4/98	6/4/98	6/4/98	6/5/98	6/5/98
	Soil Cleanup	Soil Cleanup	Soil Cleanup						
	Criteria	Criteria	Criteria						
PP Metals (mg/kg)									
Antimony	14	340	NLE	2.1 B	98.8	ND	ND	0.7 B	3.4 B
Arsenic	20	20	NLE	34.3	2650	21.8	18.5	63.2	382
Beryllium	1	1	NLE	ND	ND	0.5 B	0.3 B	0.18 B	ND
Cadmium	1	100	NLE	0.17 B	3.6	0.26 B	ND	ND	ND
Chromium	NLE	500	NLE	4.7	6.5	17.8	6.2	13.3	17.3
Copper	600	600	NLE	65.3	3460	351	16.6	25.1	115
Lead	400	600	NLE	366	10100	20.5	111	20.8	524
Mercury	14	270	NLE	0.57	3.4	ND	ND	0.19	3.6
Nickel	250	2400	NLE	3.5 B	6.8	22.7	8.3	9.18	7.1
Selenium	63	3100	NLE	ND	4.1	1.1	2.4	0.91	4.6
Silver	110	4100	NLE	0.35 B	22.2	ND	ND	ND	ND
Thallium	2	2	NLE	0.94 B	57	0.9 B	ND	ND	1.7
Zinc	1500	1500	NLE	64.5	1610	89.2	75.2	30.6	69

Volatiles Organic Compounds (ug/kg)

Aroclain	NLE	NLE	NLE	310 J	NA	ND	140 J	ND	ND
Acetone	1000000	1000000	100000	ND	NA	ND	170 JB	ND	390 B
Carbon Disulfide	NLE	NLE	NLE	ND	NA	ND	ND	ND	3000
Vinyl Acetate	NLE	NLE	NLE	ND	NA	ND	ND	ND	ND
Methylene Chloride	49000	210000	1000	ND	NA	ND	ND	ND	ND
cis- 1,2-Dichloroethene	79000	1000000	1000	ND	NA	ND	ND	ND	ND
2-Butanone (MEK)	1000000	1000000	50000	ND	NA	ND	ND	ND	ND
Chloroform	19000	28000	1000	ND	NA	ND	ND	ND	ND
1,1,1-Trichloroethane	210000	1000000	50000	ND	NA	ND	ND	ND	ND
Carbon Tetrachloride	2000	4000	1000	ND	NA	ND	ND	ND	ND
1,2-Dichloroethane (EDC)	6000	24000	1000	ND	NA	ND	430 J	ND	ND
Benzene	3000	13000	1000	ND	NA	ND	31500 D	ND	5500
Trichloroethene	23000	54000	1000	ND	NA	ND	ND	ND	ND
4-Methyl-2-pentanone (MIBK)	1000000	1000000	50000	ND	NA	ND	ND	ND	ND
Toluene	1000000	1000000	500000	ND	NA	ND	133300 JD	ND	472000 D
1,1,2-Trichloroethane	22000	420000	1000	ND	NA	ND	ND	ND	ND

Notes:

ND = Not detected

B = Compound found in method blank (organics)

B = Concentration is less than the CRDL, but greater than or equal to the IDL (Inorganic)

J = Estimated Value

D = Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID Sample ID #				46854 TR-10	46857 TR-11	46855 TR-14	46856 TR-15	46916 TR-16	46917 TR-17
Depth (feet) Sample Date	Residential Direct Contact Soil Cleanup Criteria	Non- Residential Direct Contact Soil Cleanup Criteria	Impact to Groundwater Soil Cleanup Criteria	8.5 - 9.0 6/4/98	5.0 - 5.5 6/4/98	8.5 - 9.0 6/4/98	10.5 - 11.0 6/4/98	10.5 - 11.0 6/5/98	10. - 10.5 6/5/98
Volatiles Organic Compounds (ug/kg)									
Tetrachloroethene	4,000	6,000	1,000	580 J	NA	ND	ND	ND	ND
Chlorobenzene	37,000	680,000	1,000	ND	NA	ND	ND	ND	ND
Ethylbenzene	1,000,000	1,000,000	100,000	ND	NA	5,900	ND	ND	150,000 D
Total Xylenes	410,000	1,000,000	10,000	ND	NA	13,200	311,100 D	ND	775,100 D
Styrene	23,000	97,000	100,000	ND	NA	ND	10,500	ND	ND
Isopropylbenzene	NLE	NLE	NLE	ND	NA	19,600	306 JD	ND	11,000
n-Propylbenzene	NLE	NLE	NLE	ND	NA	ND	9,000	ND	3,500
Bromobenzene	NLE	NLE	NLE	ND	NA	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NLE	NLE	NLE	ND	NA	7,300	ND	ND	282,100 D
1,2,4-Trimethylbenzene	NLE	NLE	NLE	ND	NA	ND	19,300 D	ND	7,800
4-Isopropyltoluene	NLE	NLE	NLE	ND	NA	ND	ND	ND	4,100
1,4-Dichlorobenzene	570,000	10,000,000	100,000	ND	NA	ND	ND	ND	ND
Total Target VO				580	NA	46,000	350,206	ND	1,233,800
Total TIC VO				1,900	NA	1,510,400	2,673,900	500 J	7,908,900
Acid Extractables/Base Neutrals (ug/kg)									
Isophorone	1100000	10000000	50000	ND	NA	ND	ND	ND	ND
1,2,4-Trichlorobenzene	68000	1200000	100000	ND	NA	ND	ND	ND	ND
Naphthalene	230000	4200000	100000	53 J	NA	284300 D	536300 D	ND	3851800 D
4-Chloro-3-methylphenol	10000000	10000000	100000	ND	NA	ND	ND	ND	ND
Acenaphthylene	NLE	NLE	NLE	ND	NA	10600	63800 JD	ND	139400
Acenaphthene	3400000	10000000	100000	42 J	NA	195800 D	115200 D	ND	998300 D
Diethylphthalate	10000000	10000000	50000	ND	NA	ND	ND	ND	ND
Fluorene	2300000	10000000	100000	ND	NA	155600 D	127600 D	ND	1816800 D
1,2-Diphenylhydrazine	NLE	NLE	NLE	ND	NA	ND	ND	ND	ND
Phenanthrene	NLE	NLE	NLE	260 J	NA	255800 D	232500 D	ND	3812400 D
Anthracene	10000000	10000000	100000	79 J	NA	98900 D	85000 JD	ND	1481700 D
Fluoranthene	2300000	10000000	100000	270 J	NA	161400 D	105100 D	ND	2783300 D
Pyrene	1700000	10000000	100000	220 J	NA	131900 D	88500 JD	ND	2483400 D
Butylbenzylphthalate	1100000	10000000	100000	ND	NA	ND	ND	ND	ND

Notes:

ND = Not detected

B = Compound found in method blank (organics)

B = Concentration is less than the CRDL, but greater than or equal to the IDL (inorganic)

J = Estimated Value

D = Secondary dilution factor

TABLE 1
EDGEWATER ASSOCIATES
Former Celotex Site
Analytical Sample Results

Lab ID Sample ID #:	46854 TR-10	46857 TR-11	46855 TR-14	46856 TR-15	46916 TR-16	46917 TR-17			
Depth (feet) Sample Date	Residential Direct Contact Soil Cleanup Criteria	Non- Residential Direct Contact Soil Cleanup Criteria	Impact to Groundwater Soil Cleanup Criteria	8.5 - 9.0 6/4/98	5.0 - 5.5 6/4/98	8.5 - 9.0 6/4/98	10.5 - 11.0 6/4/98	10.5 - 11.0 6/5/98	10. - 10.5 6/5/98
Acid Extractables/Base Neutrals (ug/kg)									
Benzo[a]anthracene	900	4000	500000	120 J	NA	76800 D	ND	ND	1720900 D
Chrysene	9000	40000	500000	130 J	NA	69700 D	ND	ND	1497700 D
bis(2-Ethylhexyl)phthalate	49000	210000	100000	ND	NA	ND	ND	ND	ND
Benzo[b]fluoranthene	900	4000	50000	81 J	NA	45900 D	12800	ND	1247600 D
Benzo[k]fluoranthene	900	4000	500000	78 J	NA	32400 D	6200	ND	1207300 D
Benzo[a]pyrene	660	660	100000	94 J	NA	48500 D	12000	ND	1379100 D
Indeno[1,2,3-cd]pyrene	900	4000	500000	51 J	NA	10200	3400	ND	436000
Dibenz[a,h]anthracene	660	660	100000	ND	NA	1300 J	660 J	ND	66900
Benzo[g,h,i]perylene	NLE	NLE	NLE	56 J	NA	9600	3200	ND	381100
Total Target AE/BN				1,534	NA	1,588,700	1,392,260	ND	25,303,700
Total TIC AE/BN				3,336	NA	318,500	151,300	2,600	4,118,300
PCB (ug/kg)	490	2000	50000	ND	NA	ND	ND	ND	ND
Pesticides (ug/kg)									
delta-BHC	NLE	NLE	NLE	ND	NA	ND	ND	ND	2.10 P
gamma-BHC (Lindane)	520	2,200	50,000	ND	NA	ND	ND	ND	ND
Heptachlor	150	650	50,000	ND	NA	ND	ND	ND	0.39 P
Endosulfan II	NLE	NLE	NLE	ND	NA	ND	ND	ND	2.80 P
Endosulfan sulfate	NLE	NLE	NLE	ND	NA	11 P	8.80 P	ND	7.10 P
Endrin ketone	NLE	NLE	NLE	ND	NA	ND	ND	ND	5.50 P
Cyanide (mg/kg)	1100	21,000	NLE	ND	NA	ND	ND	2.70	2.90
Phenols (ug/kg)	10000000	10,000,000	50,000	ND	NA	3,310	6,991	ND	3,740

Notes:

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B = Concentration is less than the CRDL, but greater than or equal to the IDL (Inorganic)

J = Estimated Value

D = Secondary dilution factor

